What Is Claimed Is:

1   1.   A method for generating parity codes of a data sector
2   arranging in an array of a plurality of rows having data
3   information and main data comprises:
4   scrambling the main data of the data sector to generating
5   outer-code parity; and
6   scrambling the main data of the data sector to generating
7   inner-code parity, wherein the outer-code parity is
8   generating superior to the inner-code parity.

1   2.   The method as claimed in claim 1, wherein after
2   generating the outer-code parity, the main data remains
3   unchangeable in a memory.

1   3.   The method as claimed in claim 1, further comprising
2   a step of deriving scrambling bytes from a known initial value
3   by sequential calculating before scrambling.

1   4.   The method as claimed in claim 3, wherein the initial
2   value is the first scrambling byte of the main data, a first
3   scrambling byte of the second row is derived by sequential
4   calculating from the initial value.

1   5.   The method as claimed in claim 1, further comprising
2   a step of deriving scrambling bytes from a known initial value
3   by a provided vertical calculation mechanism.

1   6.   The method as claimed in claim 5, wherein the initial
2   value is the first scrambling byte of the main data, a first
3   scrambling byte of the second row is derived by left shifting

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4   the initial value a plurality of byte and applying the provided

5   vertical calculation mechanism.

1   7.   The method as claimed in claim 1, wherein after

2   generating the inner-code parity, the date sector with the data

3   information, the scrambled data due to generating inner-code

4   parity, the inner-code parity, and the outer-code parity are

5   recorded onto an optical disk.

1   8.   The method as claimed in claim 1, wherein the data

2   information comprises ID (Identification Data), IED (ID Error

3   Detection Code), RSV (Reverse), EDC (Error Detection Code).

1   9.   A method for generating a recording data of an optical

2   disk, comprising:

3   receiving a plurality of data sectors, each data sectors

4   having data information and main data, and each data

5   sectors arrange in an array of a plurality of rows;

6   scrambling the main data of each corresponding data sector

7   to generate corresponding outer-code parity of each

8   data sector;

9   scrambling the main data of each corresponding data sector

10   to generate corresponding inner-code parity of each

11   data sector; and

12   recording the scrambled data due to generating the

13   inner-code parity with respect to each data

14   information, the inner-code parity, and the

15   outer-code parity onto the optical disk, wherein the

16   outer-code parity is generating superior to the

17   inner-code parity.

1   10. The method as claimed in claim 9, wherein the

2 inner-code parity is attached to the corresponding main data row

3 and attached to the corresponding outer-code parity.

1   11. The method as claimed in claim 9, further comprising

2 a step of interleaving the outer-code parity to each

3 corresponding data sector.

1   12. The method as claimed in claim 9, wherein after

2 generating the outer-code parity, the main data of each data

3 sectors remain unchangeable in a memory.

1   13. The method as claimed in claim 9, further comprising

2 a step of deriving scrambling bytes from a known initial value

3 by sequential calculating before scrambling.

1   14. The method as claimed in claim 13, wherein the initial

2 value is the first scrambling byte of the main data, a first

3 scrambling byte of the second row is derived by sequential

4 calculating from the initial value.

1   15. The method as claimed in claim 9, further comprising

2 a step of deriving scrambling bytes from a known initial value

3 by a provided vertical calculation mechanism.

1   16. The method as claimed in claim 15, wherein the initial

2 value is the first scrambling byte of the main data, a first

3 scrambling byte of the second row is derived by left shifting

4 the initial value a plurality of byte and applying the provided

5 vertical calculation mechanism.

1   17.   The method as claimed in claim 9, wherein the data

2   information comprises ID (Identification Data), IED (ID Error

3   Detection Code), RSV (Reverse), EDC (Error Detection Code).

1   18.   The method as claimed in claim 9, wherein the optical

2   disk is a DVD-R, a DVD+R, a DVD-RW, a DVD+RW, or a DVD-RAM.

1   19.   A method of repeatedly writing a main data which

2   stored in a memory when recording an optical disk, comprising:

3   scrambling the main data directly deriving from the memory

4   to generate outer-code parity;

5   scrambling the main data directly deriving from the memory

6   to generate inner-code parity; and

7   recording the scrambled data due to generating the

8   inner-code parity with a corresponding data

9   information, the inner-code parity and the

10   outer-code parity onto the optical disk, wherein the

11   main data remains unchangeable in the memory after

12   generating the outer-code parity.

1   20.   The method as claimed in claim 19, wherein the

2   corresponding data information comprises ID (Identification

3   Data), IED (ID Error Detection Code), RSV (Reverse), and EDC

4   (Error Detection Code).

1   21.   The method as claimed in claim 19, wherein the ID is

2   generated according to a block position of recording the main

3   data.

1   22.   The method as claimed in claim 19, wherein the
2   outer-code parity is generating superior to the inner-code
3   parity.

1   23.   The method as claimed in claim 19, further comprising
2   a step of deriving scrambling bytes from a known initial value
3   by sequential calculating before scrambling.

1   24.   The method as claimed in claim 23, wherein the initial
2   value is the first scrambling byte of the main data, a first
3   scrambling byte of the second row is derived by sequential
4   calculating from the initial value.

1   25.   The method as claimed in claim 19, further comprising
2   a step of deriving scrambling bytes from a known initial value
3   by a provided vertical calculation mechanism.

1   26.   The method as claimed in claim 25, wherein the initial
2   value is the first scrambling byte of the main data, a first
3   scrambling byte of the second row is derived by left shifting
4   the initial value a plurality of byte and applying the provided
5   vertical calculation mechanism.

1   27.   The method as claimed in claim 19 wherein the optical
2   disk is a DVD-R, a DVD+R, a DVD-RW, a DVD+RW, or a DVD-RAM.